

ENVIRONMENTAL PRODUCT DECLARATION

EPD of multiple products based on a representative product in accordance with ISO 14025 and EN 15804+A2:2019 for

Standard Panel Radiators with 6 connections (Scandinavia)

Manufactured by Stelrad Group Plc



Programme:	The International EPD [®] System
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0013912:001
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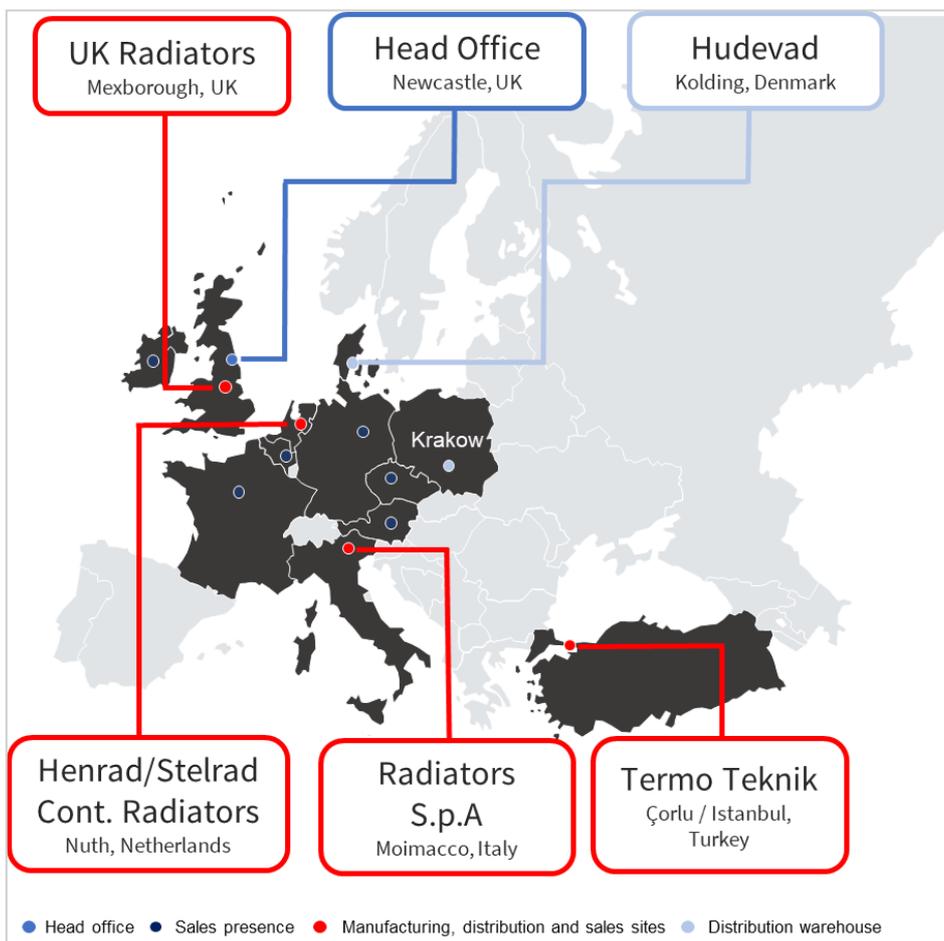
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Company Information

Stelrad Group plc (“Stelrad”) is a leading specialist manufacturer and distributor of steel panel radiators in the UK, Europe and Türkiye, selling an extensive range of products. Stelrad’s product range includes products sold in Europe under the Stelrad and Henrad brands.

Headquartered in the United Kingdom, Stelrad has been a leading supplier across Europe for over twenty years, with manufacturing and distribution facilities in the United Kingdom, The Netherlands, Türkiye and Italy, additional distribution facilities in Poland and Denmark and sales personnel in several other countries. Being part of this European group gives us the foundations and strength we need to consolidate and further strengthen our European position.

Each manufacturing facility has the capability to produce Stelrad’s full range of products. This EPD covers products sold by Hudevad.



Stelrad is one of the pioneers of radiator development in Europe. Our first panel radiators rolled off the production line back in 1960. Today, Stelrad is the largest European brand in the radiator market. We owe our leading position to our employees’ day-to-day passion for designing, producing and marketing radiators that meet the high expectations of European consumers today.

About Stelrad's Products

Stelrad radiators are manufactured to a high standard of quality. Stelrad has many years of experience implementing a strict quality management system which helps ensure customer satisfaction. All Stelrad products are EN 442-certified and some also have NF certification. Additionally, both Stelrad production facilities hold multiple ISO certifications.

Stelrad is constantly measuring, assessing and improving its service and quality, involving the whole organisation, suppliers and customers in our processes. Our aim is to continue to implement improvements, be innovative with our products and develop new ones. In this way, Stelrad radiators combine design, comfort and functionality.

This EPD covers 6-connection panel radiators manufactured in Stelrad's production facilities in the Netherlands and Türkiye. The model range is available in 4 different types:

Model range	Types
Stelrad Novello 6	T11, T21, T22, T33

The types refer to the number of steel panels and convector fins the product has, with, for example, a T21 consisting of two panels and one convector fin. All products consist largely of steel, and the product UN CPC code is 44823 radiators for central heating, not electrically heated, of iron or steel.

There are many similarities between the assessed products, with most components remaining consistent across types. There are minor differences in the specification and weights of top grilles, side panels, clips, connectors, brackets and other accessories. The amount of paint and powder coating per Kg of radiator varies by production site and by model range, as does the amount of packaging specified.

In terms of the composition of packaging there is relatively more cardboard (53% to 63% of packaging) than plastic (33% to 39% of packaging), with paper representing the smallest share (2% to 3%) of packaging materials across the range of radiators.

All paper and cardboard packaging used at the Türkiye site has 100% recycled content, the recycled content in types of plastic and plastic packaging ranges from 0% to 100%. All paper packaging used at the Netherlands site has 0% recycled content, all cardboard packaging has 100% recycled content. The recycled content in the types of plastic and plastic packaging ranges from 0% to 100%. Once assembled and packaged the products are distributed with various types of hardware packs which are used when the radiators are installed at customer sites.

This EPD presents detailed results for the Stelrad Novello 6 600mm x 1000mm type 22 panel radiator produced in the Netherlands (NUT22). The NUT22 radiator is representative of the results for the full range of Stelrad products assessed and was chosen due to relative market share of the product.

General Information

The EPD is owned by Stelrad Group Plc which has the sole ownership, liability, and responsibility for the EPD. The EPD provides current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

The programme operator is the International EPD® System EPD International AB, Box 210 60, SE-100 31 Stockholm.

Product category rules

CEN standard EN 15804 serves as the Core Product Category Rules (PCR). Product Category Rules (PCR): 2019:14 Version 1.3.4, Construction Products, EN 15804:2012 + A2:2019 Sustainability of Construction Works. PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile.

LCA Accountability: Valpak Sustainability Consulting



Third-party Verification:

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

- ✓ EPD verification by individual verifier

Third-party verifier: [Hudai Kara PhD, Metsims Sustainability Consulting, Oxford, U.K.](#)

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

The EPD owner has sole ownership, liability, and responsibility of the EPD.

Life Cycle Assessment Methodology

Declared unit

The manufacture and delivery of 1 kg of packaged 6 connection panel radiator + hardware pack to Stelrad's distribution centre in Kolding in Denmark, and onwards to customer markets across Scandinavia.

Reference service life

30 years

Time representativeness

2022

Database and LCA software

GreenDelta's EN15804 Add-on version 2 and OpenLCA Version 2.0

System boundaries

Cradle to gate with options, modules C1-C4 and module D. Included options are module A4 which covers the transport of the packaged product to the distribution centre in Kolding in Denmark, and onwards to customer markets across Scandinavia. Excluded options are module A5 which covers the installation and modules B1-B7 which cover the use phase of the radiators.

LCA modelling

There is no allocation of co-products in the LCA modelling underpinning this EPD. No cut-offs are applied to either the inventory data or the calculated environmental impacts. As per the requirements of the International EPD® system, the LCA results are shown in the results tables

Audience

The intended application for this study is to provide comprehensive information on the environmental impacts of the range of European radiators manufactured by Stelrad. The intended audience is B2B.

Content declaration

Product components	Weight per kg of product (kg)	% post-consumer by product weight	Biogenic material weight - % per product	Biogenic material weight - kg C per product
Steel	0.96	17.5%	0%	0
Other	0.04	<0.1%	0%	0
TOTAL	1	17.5%	0%	0

Packaging materials	Weight (kg)	Weight - % (versus the product)	Biogenic material weight - kg C per product
Cardboard/paper	0.30	0.9%	0.10
Plastic	0.15	0.5%	0
TOTAL	0.44	1.4%	0.10

Dangerous substances

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in the product either above the threshold for registration with the European Chemicals Agency or above 0.1%.

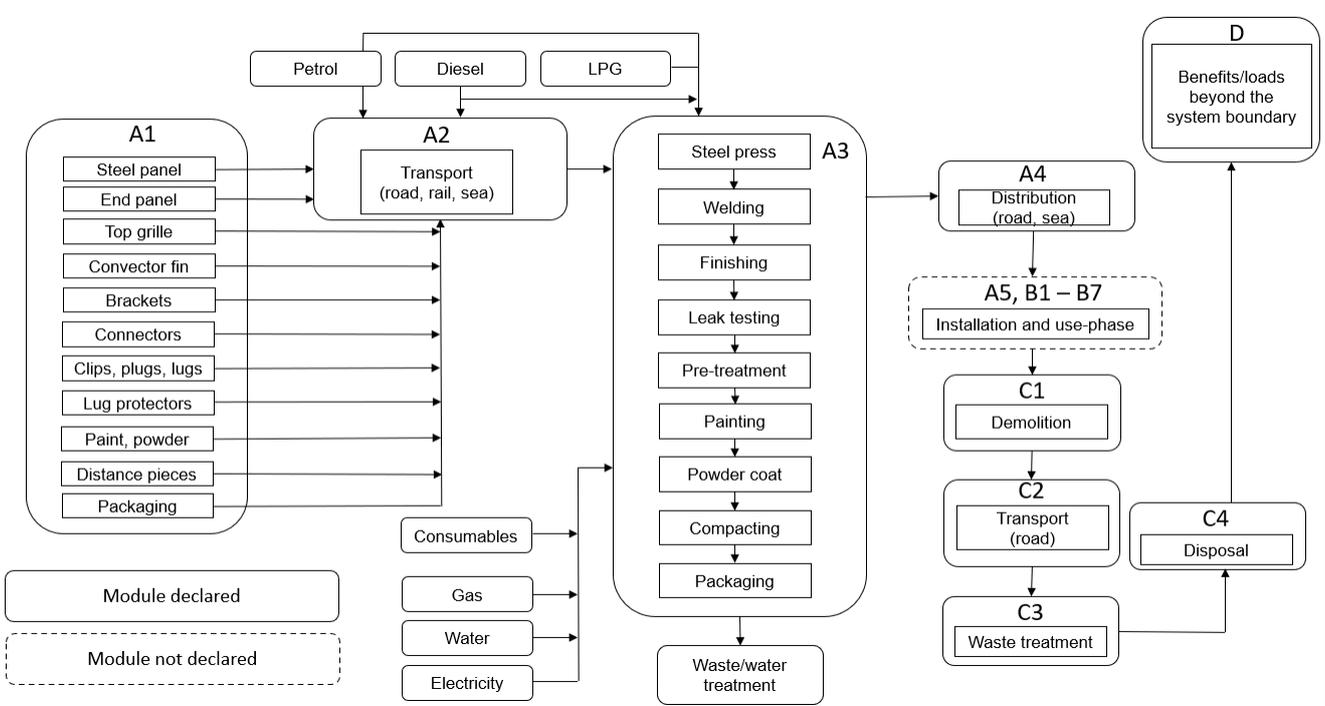
Product Life Cycle Overview

Modules declared in the EPD

Module	Product stage			Construction		Use stage							End of Life stage				Benefits / loads beyond the system boundary
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Modules declared	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	D
Geography	GLO	GLO	NL, TR	SCA									SCA	SCA	SCA	SCA	SCA
Specific data used	>90%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	<10%				-	-	-	-	-	-	-	-	-	-	-	-	-

A1 = Raw materials supply, A2 = Transport, A3 = Manufacturing, A4 = Transport, A5 = Construction/installation, B1 = Use, B2 = Maintenance, B3 = Repair, B4 = replacement, B5 = Refurbishment, B6 = Operational energy use, B7 = Operational water use, C1 = De-construction/demolition, C2 = Transport, C3 = Waste treatment, C4 = Waste disposal
 D = Benefits/loads beyond the system boundary.
 SCA = Denmark, Finland, Norway, Sweden.
 X = Module declared, ND = Module not declared

System diagram



Raw materials supply (A1)

The extraction and processing of raw materials used to manufacture the radiators, their packaging and hardware packs at the production sites in Türkiye and the Netherlands. By weight, the main material input is steel coil which has an average recycled content of 15% to 20% (17.5% is assumed).

Transport (A2)

Transport of materials, components and packaging from supplier locations to the sites in Türkiye and the Netherlands. Supplier locations and transport modes are provided by Stelrad and include the below.

Mode	Vehicle type	Fuel type
Road	Lorry, 16 – 32 tonnes, EURO6	Diesel
	Lorry, 7.5 - 16 tonnes, EURO6	
Rail	Freight train	60% electric, 40% diesel
Sea	Freight container ship	Heavy fuel oil

Manufacturing (A3)

Usage amounts of energy, fuels and water etc are allocated according to 2022 production data supplied by Stelrad. Climate impact of electricity used in manufacturing is 0.5775 kg CO₂eq per kWh, source: Natural gas (43%), Oil (32%), Coal (10%), Wind (9%), Solar (3%), Nuclear (3%), Other (0%).

Transport (A4)

The transport of the final packaged products to the distribution centre at Kolding in Denmark. Also included is the distribution to Scandinavian markets from Kolding, for which a distance of 100km per radiator is used.

Mode	Vehicle type	Fuel type
Road	Lorry, 16 – 32 tonnes, EURO6	Diesel

De-construction/demolition (C1)

It is assumed that there are no environmental impacts associated with the removal of the installed radiator at EoL.

Waste transport (C2)

On average, the transport by road to local waste sites from the installation site is assumed to be a journey of 10 km by diesel lorry, 16-32 tonnes, EURO6.

Waste treatment (C3)

90% of the steel components are assumed to go to recyclers, the remainder is landfilled. It is assumed that the plugs, clips, and panels etc are not removed from the radiator when it is sent to scrap metal recyclers.

Waste disposal (C4)

EoL wastes that are not recycled are disposed of in the country in which the radiator was sold according to average waste management routes for each country.

Benefits (D)

Steel is 100% recyclable. The main benefits beyond the system boundary arise from the recycling of steel. The benefits of recycling of packaging materials are small by comparison. It is assumed recycling avoids the production of equivalent virgin materials.

Excluded from the system boundary

The environmental impacts of buildings and infrastructure, plant, machinery and equipment, and repair/maintenance at the two production sites are excluded, as are impacts from business travel and staff commuting.

Mandatory Impact Category Indicators According to EN 15804

Environmental Indicators (per Kg of radiator)

Environmental indicator GWP-fossil	Units	Raw materials supply, transport and production	Construction /assembly	End of life				Benefits/loads beyond the system boundary
		Total	Transport	De-construction demolition	Transport	Waste treatment	Disposal	Reuse-Recovery-Recycling-potential
		A1-A3	A4	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	2.49E+00	1.36E-01	0.00E+00	1.63E-03	2.41E-02	5.36E-03	-1.35E+00
GWP biogenic	kg CO ₂ eq.	1.11E-02	0.00E+00	0.00E+00	0.00E+00	-1.11E-02	0.00E+00	0.00E+00
GWP-LULUC	kg CO ₂ eq.	1.97E-03	5.46E-05	0.00E+00	6.52E-07	3.36E-05	5.80E-07	-1.08E-03
GWP-Total	kg CO ₂ eq.	2.50E+00	1.36E-01	0.00E+00	1.63E-03	1.30E-02	5.36E-03	-1.35E+00
ODP	kg CFC11 eq.	1.49E-07	3.16E-08	0.00E+00	3.77E-10	1.58E-09	2.29E-10	-6.29E-08
AP	molc H ⁺ eq.	1.19E-02	3.87E-04	0.00E+00	4.62E-06	1.15E-04	6.74E-06	-6.00E-03
EP - freshwater	kg P eq.	1.15E-03	9.00E-06	0.00E+00	1.07E-07	9.02E-06	7.46E-08	-6.37E-04
EP - marine	kg N eq.	2.53E-03	7.89E-05	0.00E+00	9.41E-07	5.45E-05	5.16E-06	-1.43E-03
EP - terrestrial	molc N eq.	2.47E-02	8.57E-04	0.00E+00	1.02E-05	3.20E-04	2.64E-05	-1.35E-02
POCP	kg NMVOC eq.	9.08E-03	3.20E-04	0.00E+00	3.82E-06	8.87E-05	7.93E-06	-5.28E-03
ADP - minerals and metals*	kg Sb eq.	4.95E-05	4.64E-07	0.00E+00	5.54E-09	6.23E-07	1.72E-09	-1.51E-05
ADP - fossil*	MJ	2.32E+01	1.58E-01	0.00E+00	1.88E-03	7.75E-02	1.64E-03	-1.44E+01
WDP*	m ³	1.08E+00	1.00E-02	0.00E+00	1.20E-04	6.18E-03	8.78E-04	-4.95E-01

GWP-biogenic = Global warming potential biogenic, GWP-fossil = Global warming potential fossil fuels, GWP-LULUC= Global warming potential land use and land use change, GWP - Total = Total global warming potential, ODP = Ozone layer depletion potential, AP = Acidification potential, EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment, EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment, EP-terrestrial = Eutrophication potential terrestrial, POCP = Formation potential of tropospheric ozone, ADP - minerals and metals = Abiotic depletion potential for non-fossil resources, ADP - fossil = Abiotic depletion for fossil resources potential, WDP = Water use deprivation potential.

Disclaimer – 1: The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

*Disclaimer – 2: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Additional Mandatory Indicators Results

GWP-GHG (per Kg of radiator)

Indicator	Units	Raw materials supply, transport and production	Construction /assembly	End of life				Benefits/loads beyond the system boundary
				Transport	De-construction demolition	Transport	Waste treatment	
			A1-A3	A4	C1	C2	C3	C4
GWP-GHG ¹	Kg CO ₂ eq.	2.19E+00	1.35E-01	0.00E+00	1.51E-03	3.07E-02	6.27E-03	-1.31E+00

¹This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product.
As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste Indicators (per Kg of radiator)

Indicator	Units	Raw materials supply, transport and production	Construction /assembly	End of life				Benefits/loads beyond the system boundary
				Transport	De-construction demolition	Transport	Waste treatment	
			A1 - A3	A4	C1	C2	C3	C4
HW	kg	5.94E+00	4.64E-02	0.00E+00	5.54E-04	4.19E-02	4.13E-04	-3.03E+00
NHW	kg	3.65E-01	1.07E-01	0.00E+00	1.28E-03	4.12E-02	1.05E-01	-2.12E-01
RW	kg	1.23E-03	4.15E-05	0.00E+00	4.95E-07	2.59E-05	2.32E-07	-4.90E-04

HW = Hazardous waste, NHW = Non-hazardous waste, RW = Radioactive waste.

Resource Use Indicators (per Kg of radiator)

Indicator	Units	Raw materials supply, transport and production	Construction /assembly	End of life				Benefits/loads beyond the system boundary
				Transport	De-construction demolition	Transport	Waste treatment	
			A1-A3	A4	C1	C2	C3	C4
PENRT	MJ	3.74E+01	2.08E+00	0.00E+00	2.48E-02	2.33E-01	1.66E-02	-1.92E+01
PENRE	MJ	2.52E+01	2.02E-01	0.00E+00	2.41E-03	1.19E-01	1.86E-03	-1.52E+01
PENRM	MJ	1.23E+01	1.88E+00	0.00E+00	2.24E-02	1.14E-01	1.48E-02	-4.02E+00
PERE	MJ	1.89E+00	2.22E-02	0.00E+00	2.65E-04	1.54E-02	1.33E-04	-1.04E+00
PERM	MJ	5.08E-01	7.30E-03	0.00E+00	8.71E-05	1.07E-02	5.68E-05	-2.66E-01
PERT	MJ	2.40E+00	2.95E-02	0.00E+00	3.52E-04	2.62E-02	1.90E-04	-1.30E+00
FW	m ³	2.63E-02	2.39E-04	0.00E+00	2.86E-06	1.46E-04	2.06E-05	-1.18E-02
SM	kg	5.16E-01	2.11E-03	0.00E+00	2.52E-05	1.83E+00	1.54E-05	3.90E-01
NRSF	MJ	1.37E-01	2.56E-03	0.00E+00	3.06E-05	4.85E-04	3.10E-06	-3.69E-02
RSF	MJ	3.24E-02	6.31E-04	0.00E+00	7.53E-06	6.05E-04	1.97E-06	-6.67E-03

PENRT = Total use of non-renewable primary energy resources,

Output Flow Indicators (per Kg of radiator)

Indicator	Units	Raw materials supply, transport and production	Construction /assembly	End of life				Benefits/loads beyond the system boundary
				Transport	De-construction demolition	Transport	Waste treatment	
			A1-A3	A4	C1	C2	C3	C4
CFR	kg	1.44E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EXE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	2.78E-01	1.76E-03	0.00E+00	2.10E-05	1.46E-03	7.63E-06	-1.79E-01

CFR = Components for reuse.
EXE = Exported energy,
MFE = Materials for energy recovery,
MFR=Materials for recycling.

Additional voluntary indicator results

Environmental indicators

Indicator	Units	Raw materials supply, transport and production	Construction / assembly	End of life			
			Transport	De-construction demolition	Transport	Waste treatment	Disposal
			A1-A3	A4	C1	C2	C3
Ecotox	CTUe	8.27E-01	6.92E-02	0.00E+00	8.26E-04	2.27E-02	2.15E-04
Humc	CTUh	1.12E-08	4.40E-11	0.00E+00	5.25E-13	4.03E-11	5.24E-13
Humnc	CTUh	1.68E-07	2.57E-09	0.00E+00	3.06E-11	2.06E-09	1.42E-10
Ionr	kBq U-235eq	1.39E-01	1.07E-02	0.00E+00	1.27E-04	2.71E-03	7.15E-05
Land	Pt	6.43E+00	1.75E+00	0.00E+00	2.09E-02	8.66E-02	2.67E-02
Partm	Disease inc.	1.59E-07	8.64E-09	0.00E+00	1.03E-10	1.79E-09	1.09E-10

Ecotox = Ecotoxicity, freshwater
 Humc = Human toxicity, cancer effect
 Humnc = Human toxicity, non-cancer effects
 Ionr = Ionising radiation, HH
 Land = Land use
 Partm = Particulate matter, HH

Data quality

Module	Stage	Type of Data
A1	Materials acquisition	Supplier/site product specific, generic database
A2	Materials transport	Supplier/site product specific, generic database
A3	Manufacturing	Supplier/site product specific, generic database
A4	Distribution transport	Site/product specific, scenario, generic database
C1	De-construction /demolition	Scenario
C2	EoL waste transport	Scenario, site/product specific data, generic database
C3	EoL waste treatment	Scenario, site/product specific data, generic database
C4	EoL waste disposal	Scenario, site/product specific data, generic database
D	Benefits	Scenario, product specific data, generic database

Benefits/loads beyond the system boundary
Reuse-Recovery-Recycling-potential
D
-3.06E-01
-8.23E-09
-7.42E-08
-5.79E-02
-3.38E+00
-1.07E-07

Comprehensive process specific input data of high quality, accuracy and granularity have been provided by Stelrad regarding the manufacturing and supply chain processes for the assessed radiators.

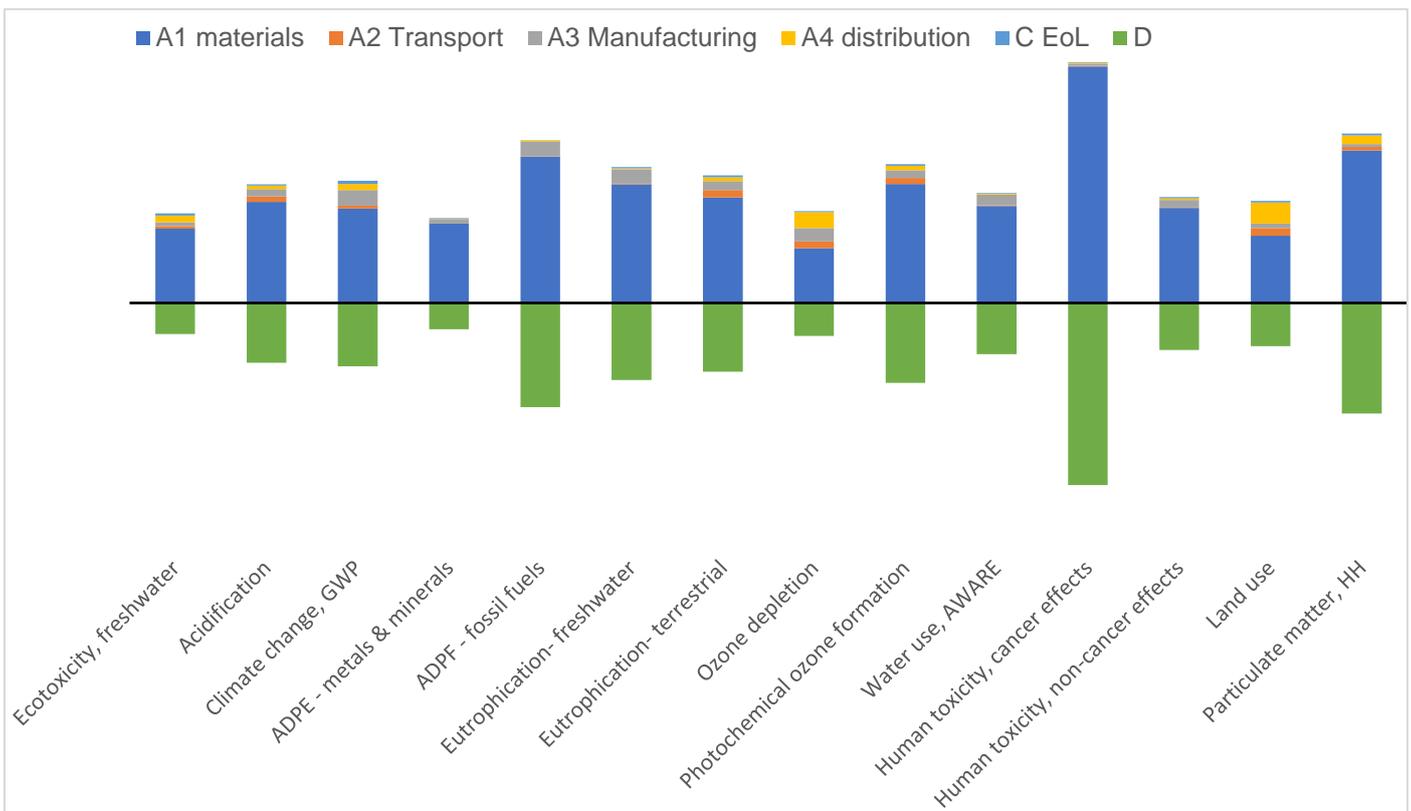
The datasets are for 2022, and therefore recent and representative of processes used. Generic datasets, are, in general, representative of the location of the production site, supplier locations and transport modes for delivery of materials and the final packaged product.

The generic data providing the environmental impacts for brass are calculated based on assumptions and theoretical models, and the quality of this data should be considered poor. As such, it is recognised that the impacts (though relatively small) are uncertain.

Interpretation

The carbon footprint of the displayed representative radiator (the NUT22) is 2.65 kg CO₂eq per kg of radiator. Across the range of radiators included in this assessment, the carbon footprints range from 2.65 to 2.70 kg CO₂eq per kg of radiator. For the products included in this EPD the raw material supply stage (module A1) is by far the most important of all of the life cycle stages. The majority (78.4% to 80.0%) of the carbon footprint is attributable to module A1. Steel components account for the majority of the carbon footprint, for the NUT22, steel accounts for 76.1% (or 2.02 kg CO₂eq per kg) of the overall carbon footprint.

Transport carbon (A2+A4) contributes around 10% (or 253 gCO₂eq per kg) to the overall carbon footprint for the ranges assessed. Of this, approximately 7% (or around 174 gCO₂eq per kg) is accounted for by transport of the finished packaged product, and hardware pack, to the Kolding distribution centre and onward to customer markets across Scandinavia. Across the full range of products assessed the A4 transport carbon values range from 136 to 211 gCO₂eq per kg of radiator. For comparable heights and widths, the range of radiators produced in Türkiye are towards the upper end of this range due to additional transport of the finished product. The figure below clearly illustrates that the module A1 stage of the life cycle is responsible for the majority of the environmental impacts as measured by the various environmental indicators.



Additional information

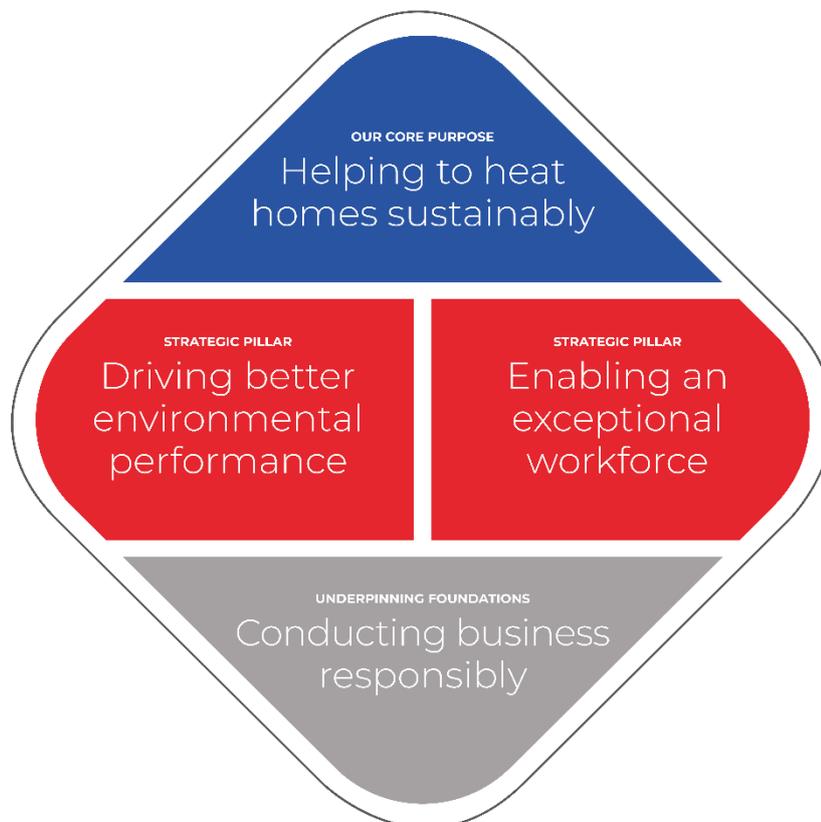
Sustainability at Stelrad

Stelrad's core purpose: 'helping to heat homes sustainably' reflects the significant role that Stelrad can play in facilitating the transition to a low and zero carbon heating industry, and shows the importance we place on managing the business for tomorrow as well as today.

Stelrad's 'Fit for the Future' sustainability framework is centred around our core purpose and guides our actions towards a more sustainable future. The framework focuses on the material issues for Stelrad's stakeholders – ensuring our efforts are directed effectively. The Fit for the Future framework sets out Stelrad's approach to delivering its business strategy whilst also delivering on its sustainability commitments to stakeholders and the environment.

Fit for the Future comprises two strategic pillars. The first, 'Driving better environmental performance', will focus us on reducing our impact on the environment whilst also engaging, educating and influencing others throughout the value chain to achieve an effective transition to the low and zero carbon heating systems of the future. The second, 'Enabling an exceptional workforce', helps our people contribute positively to the delivery of our strategy and our sustainability objectives.

Stelrad's sustainability strategy is underpinned by 'Conducting business responsibly' – ensuring strong governance, exceptional safety standards and effective oversight of supply chain management. These are the structural foundations for achieving our objectives.



References

GPI International EPD® System (2024) General Programme Instructions for the International EPD® System. Version 5.0.0 www.environdec.com.

PCR 2019:14 Construction products (EN 15804:A2) (v1.3.4) prepared by IVL Swedish Environmental Research Institute, Secretariat of the International EPD® System, date 2024-04-30.

EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products.

ISO 14025 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14040/44 Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006).

The International EPD® System - The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD@s as well as keeping a library of EPD@s and PCRs in accordance with ISO 14025. www.environdec.com

EN15804 Add-on version 2, <https://nexus.openlca.org/>, <https://nexus.openlca.org/ws/files/23889>

GreenDelta GmbH, <https://www.greendelta.com/>

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